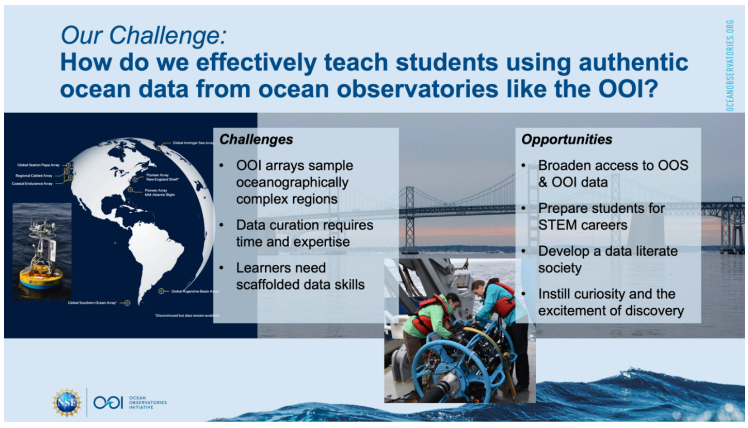
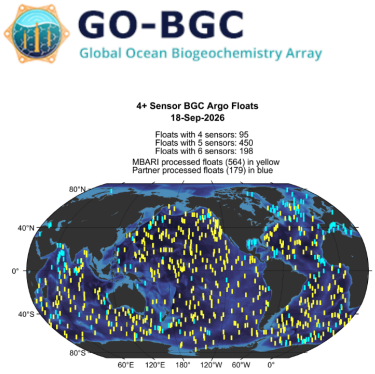
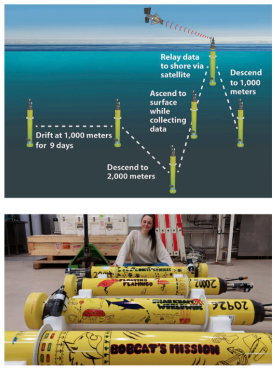
OO Exchange, September 22, 2026
Topical focus: Education and Workforce Development
Facilitators: Sage Lichtenwalner, Anna Pfeiffer-Herbert, and Janice McDonnell

Summary

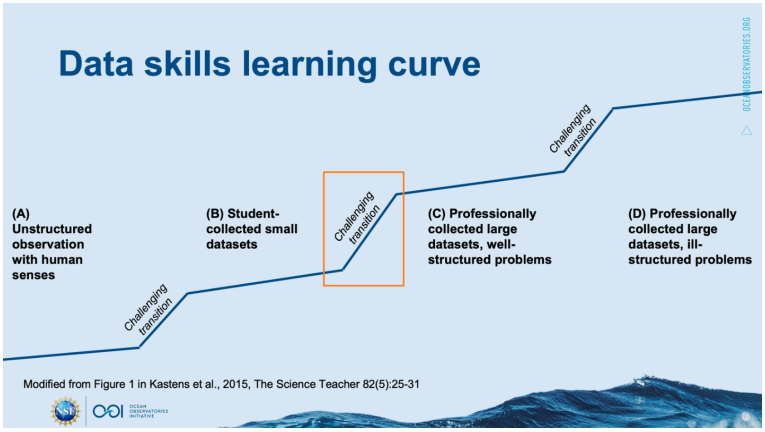
Twenty-three attendees participated in the virtual session (31 individuals registered). The group first reviewed introductory information about the DCL process and resources, and the importance of ocean observing data in building data literacy and other transferable skills while engaging students in the workforce development pipeline for key STEM careers. Education-centered links to the observing systems described in the DCL were reviewed.

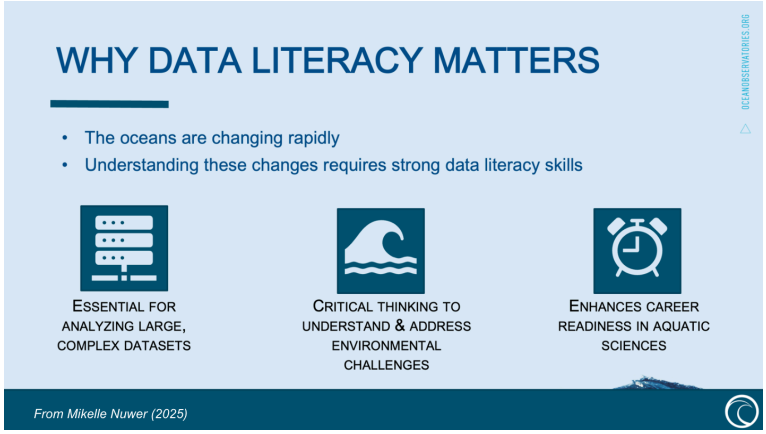






https://www.go-bgc.org/outreach/adopt-a-float





The group then split into four breakout groups focused on key questions from the DCL:

- Q1: How should NSF's investments complement and/or differ from other national and international efforts; for example, the National Oceanic and Atmospheric Administration's (NOAA) ocean observation systems?
- Q5: Which elements in NSF's existing observational portfolio should be maintained or updated to fulfil the identified needs?
- Q6: What other operational uses and stakeholders should be considered and how can their needs be best served?
- Q7: What are robust metrics to assess the scientific and societal impact and value of observations over time?

Key takeaways from this OO Exchange included:

- When responding to the prompts, you are encouraged to **think about personal responses**- how do you connect to ocean observing, how does it connect to you, your education activities, your science? **Lead with the impact.** If you have a specific number or story, lead with that, as it emphasizes the impact from the research or education side.
- **Considering operational arrays (e.g. NOAA) vs. more research-based arrays (e.g. NSF)** and how these different systems support each other. Research arrays have more instruments (more sensing), and can provide a much larger set of variables that can be investigated by an individual on their own. This then **provides a complex suite of data that is more engaging for students and researchers alike, encouraging them to think about and/or solving bigger problems and developing new ideas.**
    - NSF has done a great job supporting the development of new instruments, including robust testing, and determining what scientists need. Where NOAA systems are more operational, if observations identify a new process, the array won't necessarily be redesigned to further study that phenomena. NSF can be more nimble with its systems, however, and doesn't have to observe in one specific way. It is **important for students to engage in that entire process as well and receive exposure to the technology development pipeline. This can help set students up for career paths and trajectories in "blue tech" and/or sensor development.**
- When considering **AI-ready data,** the effort it takes to make data sets "AI-ready" on the research side are the same exercises that have to be done in education. **If you make a data set that is good for AI, then it is also good for students (the same data packages could be used for both purposes). When considering future activities, collaboration and/or codevelopment of data between those individuals working on AI-ready data sets, and educators, could be very beneficial.**
- In the NSF Strategic Plan, it specifically talks about **expanding STEM capacity across regions.** Need to recognize the value of Observatories Initiative (OOI) as a **broader impact for research/democratizing access to data**. **OOI data enables research experiences, particularly for undergraduates, who would not otherwise have the opportunity to collect their own data, let alone open ocean data. OOI infrastructure is important for providing data and technology for institutions that don't have their own research vessels or research equipment.** This is applicable to **community colleges**, which is also called out in the NSF Strategic Plan

    - **Teaching with these data examples helps to develop a student's "science identity"**. OOI Data in "real-time" can excite students and get them to think about what's going on in the ocean (video and interactive visualizations are much more captivating to students than data summaries). It also offers a way to reach students who aren't necessarily going to go into ocean careers or STEM careers (but find that data sets to be "very cool"). General workforce/data analysis skills can be developed in this way.
    - Especially for nonscience majors, being introduced to an ocean observing program is mindboggling, when they learn about all of the different individuals that need to work together (to maintain/deploy the sensors, maintain the data, run the ships, etc). **This exposes students to a suite of careers they would not have known about otherwise.**
    - If these ocean observing programs, associated data, and opportunities do not exist, it undermines the effectiveness of educational resources that have been developed using the existing programs.
- There is a need for NSF education to **provide more support for educators in workforce fields, especially in developing communities that can provide best practices around key areas, e.g. aquaculture, environmental sciences, and water treatment.**
    - **Investment is needed in teaching people how to use these data (not only production of data)**. Sharing data processing procedures/tools, educational/training resources, recommended practices, structured training courses.
- Metrics that could be considered:
    - Number of K-12 classrooms in which the observations are used
    - Number of college/university classrooms in which the observations are used
    - Uses not captured by academic citations: insurance industry, energy, third-party weather forecasting, aquaculture.